REMARKS

Claims 1 to 14 are pending in this application. All the pending claims stand rejected. Applicants respectfully request reconsideration of the rejected claims in light of the following remarks.

§ 112 Rejections

Claims 1-14 stand rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards (or Applicants regard) as the invention. The Examiner asserts that it is unclear how a library of compounds may be formed from varying the reaction conditions when only one compound has been introduced into the reactor. The Examiner acknowledges that varying certain properties, such as temperature, may alter the rate of reaction or the amount of product produced, but asserts that it is unclear how different products could be produced.

One ordinary skill in the art would understand that even when using only one compound in the reactor, it is possible to produce a variety of different products merely by varying the reaction conditions. This can be accomplished, for example, in the case of a homopolymerization, where the reaction conditions can affect the average molecular weight of the resulting molecule. (Encyclopedia of Polymer Science and Engineering, Vol. 8, pg. 610, Wiley-Interscience, 1987). It is well known that the mean molecular size of the resulting polymer is in part a function of the reaction rate. Molecular weight is indicative of the number of repeating units in the polymer and thus define the identity of the polymer itself, i.e., a product having a different molecular weight from another product is properly characterized as having a different chemical identity. For example, a hydrocarbon with only 1 carbon would have a different identity from a molecule with 2 carbons and so on. Since it is possible to produce batches of polymer material of different molecular weights from the same starting monomer by varying the reaction conditions, it is possible using only one starting monomer to produce a library of different compounds (e.g., polymers of different size/molecular weight). In other words, by introducing one component into the reactor and varying the reaction conditions (e.g.,

reaction rate), it is possible to vary the average molecular weight of the product, and thus produce a variety of different end products from only one starting component.

Applicants submit that the rejection of claims 1-14 under 35 USC § 112, second paragraph, has been overcome and should be withdrawn.

§ 102 Rejections

Claims 1-4, 6, and 8-12 stand rejected under 35 USC § 102(e) as being anticipated by Bergh et al., USPN 6,749,814 (hereinafter referred to as "Bergh I"). The Examiner asserts that Bergh I "teaches varying a wide variety of variables including residence time, temperature, starting materials, pressure, mixing and reaction yield." (Office Action, p. 3). Although, Bergh I teaches to vary a reaction variable between reactors or groups of reactors (col. 22, line 25-26; col. 44, line 19-21; col. 44, line 24-26; col. 44, line 47-50; col. 45, line 3-6), Bergh I fails to disclose the varying of a reaction variable over time within the same reactor. Bergh I thus fails to disclose a method of using a plug flow reactor which involves "changing over time at least one of the variables affecting the one or more components to produce a combinatorial library of materials" as is recited in claim 1. For this reason, Applicants submit that Bergh I does not disclose all of the elements of the claimed invention.

This distinction was considered by the Examiner with respect to a previously cited reference by Bergh et al, US 2002/0170976 (hereinafter referred to as "Bergh II"), in the Office Action mailed 10/20/2004. Specifically, Applicants had argued that Bergh II did not teach varying of a reaction variable over time in the same reactor (as opposed to varying it over space among different reactors). The Examiner disagreed, arguing that the plug flow reactor described in Bergh II had an axial heating profile, which resulted in the varying of reaction conditions over time within the same reactor not merely among different reactors (see October 20, 2004 Office Action, p. 4). However, this axial heating profile is not a feature that is disclosed in the presently cited Bergh et al. (USPN 6,749,814). Indeed, the paragraphs from Bergh II that the Examiner had asserted taught this feature, specifally paragraphs 29-38, 40, are not found in Bergh I. Consequently, much of the teachings relied on by the Examiner with respect to Bergh II are missing from Bergh I. Since the varying of a reaction variable over time in a reactor is not described by Bergh I , this reference fails to anticipate the present claims.

The rejection of claims 1-4, 6, and 8-12 under 35 USC § 102(e) as being anticipated by Bergh et al. (6,749,814) has been overcome and should be withdrawn.

§ 103 Rejections

Claims 5 and 7 stand rejected under 35 USC § 103(a) as being unpatentable over Bergh et al. (6,749,814) in view of Priddy et al. (4,572,819). The examiner asserts that Bergh describes each and every element of the methods of claims 5 and 7, except for the use of an extruder in the reaction, and that Priddy provides this missing teaching. However, as explained above, Bergh does not disclose all of the elements of the present invention, because it fails to teach the varying of variables over time in a reactor. Priddy does not compensate for the deficiencies of Bergh. Thus, even in combination, these references do not disclose all of the elements of claims 5 and 7. This rejection should, therefore, be withdrawn.

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergh et al (6,749,814) in view of Citron et al. (6,586,541). The examiner asserts that Bergh describes every element of the method of claim 13 and 14, except for a step-growth or coordination polymerization and the use of a metallocene catalyst. However, as explained above, Bergh does not teach all the elements of the present invention, because it fails to describe the varying of variables over time in a reactor. Citron does not compensate for the deficiencies of Bergh. Thus, even in combination these references do not disclose all of the elements of claims 13 and 14. This rejection should, therefore, be withdrawn.

In summary, the rejection of claims 5, 7, 13, and 14 under 35 USC § 103(a) as being unpatentable over either Priddy et al. (4,572,819) or Citron et al. (6,586,541) have been overcome and should be withdrawn.

CONCLUSION

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is requested.

Respectfully submitted,

Oct. 31, 2005
Date

By: Sean J. Edman
Sean J. Edman, Reg. No.: 42,506
Telephone No.: 651-575-1796

Office of Intellectual Property Counsel
3M Innovative Properties Company
Facsimile No.: 651-736-3833